IN THE CLAIMS

1. (Currently Amended) A data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, ~~characterized in that~~ the file comprising:

start address information for an unrecorded area existing in a volume space, the start address information being [[is]] recorded in the volume space as part of root directory file management information.

2. (Currently Amended) A data storage medium as described in claim 1, wherein [[said]] the start address information is recorded using an indirect entry for managing a root directory file recording area.

3. (Currently Amended) A data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, ~~characterized in that~~ the file comprising:

invalid data not used for retrieving volume/file structure, the invalid data being [[is]] recorded [[added]] before and after volume/file structure and a data file; and

invalid extent management information for managing an invalid data recording area, the invalid extent management information being [[is]] recorded in [[the]] a volume space as part of root directory file management information.

4. (Currently Amended) A data storage medium as described in claim 3, wherein the invalid extent management information is recorded using an allocation descriptor for managing a root directory file recording area.

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5. (Currently Amended) A data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, ~~characterized in that~~ the file comprising:

root directory file management information that is plurally recorded as main chaining information and reserve chaining information;

first address information, corresponding to [[of]] an area [[where]] in which the main chaining information and the reserve chaining information are recorded at a beginning of a volume space, that is recorded as part of a file set descriptor; and

second address information, corresponding to [[of]] an area [[where]] in which the main chaining information and the reserve chaining information is update recorded, that is recorded as part of the main chaining information and the reserve chaining information.

6. (Currently Amended) A data recording method for performing a formatting process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the method comprising:

[[a]] recording chaining information ~~recording step for~~ comprising recording start address information for an unrecorded area existing in a volume space as part of root directory file management information.

7. (Currently Amended) A data recording method as described in claim 6, wherein recording the chaining information further comprises recording ~~step records~~ the start address information for [[an]] the unrecorded area using an indirect entry for managing a root directory file recording area.

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8. (Currently Amended) A data recording method for performing a formatting process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the method comprising:

[[a]] recording chaining information recording step for comprising recording invalid data not used for retrieving volume/file structure [[added]] before and after volume/file structure and a data file, and recording invalid extent management information for managing an invalid data recording area as part of root directory file management information.

9. (Currently Amended) A data recording method as described in claim 8, wherein recording the chaining information further comprises recording step records the invalid extent management information using an indirect entry for managing a root directory file recording area.

10. (Currently Amended) A data recording method for performing a formatting process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the method comprising:

[[a]] recording file set information recording step for comprising recording, as part of a file set descriptor, address information for an area [[where]] in which main chaining information and reserve chaining information are recorded at a beginning of a volume space; and

[[a]] recording chaining information recording step for comprising plurally recording the main chaining information and the reserve chaining information having address information of an

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area [[where]] in which root directory file management information and the main chaining information and the reserve chaining information are update recorded.

11. (Currently Amended) A data recording apparatus for performing a formatting process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the apparatus comprising:

a chaining information recording means for recording recorder that records start address information for an unrecorded area existing in a volume space as part of root directory file management information.

12. (Currently Amended) A data recording apparatus as described in claim 11, wherein the chaining information recording means recorder records the start address information for [[an]] the unrecorded area using an indirect entry for managing a root directory file recording area.

13. (Currently Amended) A data recording apparatus for performing a formatting process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the apparatus comprising:

a chaining information recording means for recording recorder that records invalid data, not used for retrieving volume/file structure [[added]], before and after volume/file structure and a data file, and recording that records invalid extent management information, for managing an invalid data recording area, as part of root directory file management information.

14. (Currently Amended) A data recording apparatus as described in claim 13, wherein the chaining information ~~recording means~~ recorder records the invalid extent management information using an indirect entry for managing a root directory file recording area.

15. (Currently Amended) A data recording apparatus for performing a formatting process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the apparatus comprising:

a file set information ~~recording means for recording~~ recorder that records, as part of a file set descriptor, address information for an area [[where]] in which main chaining information and reserve chaining information are recorded at a beginning of a volume space; and

a chaining information ~~recording means for~~ recorder that plurally ~~recording~~ records main chaining information and reserve chaining information having address information of an area [[where]] in which root directory file management information and the main chaining information and the reserve chaining information are update recorded.

16. (Currently Amended) A data recording method for performing a file recording process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the method comprising:

[[a]] recording chaining information ~~recording step for~~ comprising recording start address information for an unrecorded area existing in a volume space as part of root directory file management information.

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17. (Currently Amended) A data recording method as described in claim 16, wherein recording the chaining information ~~recording step records~~ further comprises recording the start address information for [[an]] the unrecorded area using an indirect entry for managing a root directory file recording area.

18. (Currently Amended) A data recording method for performing a file recording process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the method comprising:

[[a]] recording chaining information ~~recording step for~~ comprising recording invalid data not used for retrieving volume/file structure [[added]] before and after volume/file structure and a data file, and recording invalid extent management information for managing an invalid data recording area as part of root directory file management information.

19. (Currently Amended) A data recording method as described in claim 18, wherein recording the chaining information ~~recording step records~~ further comprises recording the invalid extent management information using an indirect entry for managing a root directory file recording area.

20. (Currently Amended) A data recording method for performing a file recording process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the method comprising:

[[a]] <u>reproducing</u> file set information ~~reproducing step for~~ <u>comprising</u> reproducing address information of an area [[where]] <u>in which</u> main chaining information and reserve chaining information are recorded at a beginning of a volume space using a file set descriptor; <u>and</u>

[[a]] <u>recording</u> chaining information ~~recording step for~~ <u>comprising</u> reproducing, using <u>the</u> main chaining information or <u>the</u> reserve chaining information, following <u>the</u> main chaining information or <u>the</u> reserve chaining information, or root directory file management information[[;]]<u>,</u> and

——————— ~~a chaining information recording step for~~ plurally recording <u>the</u> main chaining information and <u>the</u> reserve chaining information having address information of an area [[where]] <u>in which the</u> root directory file management information and <u>the</u> main chaining information and <u>the</u> reserve chaining information are update recorded.

21. (Currently Amended) A data recording apparatus for performing a file recording process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] <u>in which</u> a number of data recording operations to a same area is limited, <u>the apparatus</u> comprising:

a chaining information ~~recording means for recording~~ <u>recorder that records</u> start address information for an unrecorded area existing in a volume space as part of root directory file management information.

22. (Currently Amended) A data recording apparatus as described in claim 21, wherein the chaining information ~~recording means~~ <u>recorder</u> records <u>the</u> start address information for [[an]] <u>the</u> unrecorded area using an indirect entry for managing a root directory file recording area.

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23. (Currently Amended) A data recording apparatus for performing a file recording process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the apparatus comprising:

a chaining information ~~recording means for recording~~ recorder that records invalid data not used for retrieving volume/file structure [[added]] before and after volume/file structure and a data file, and that records [[recording]] invalid extent management information for managing an invalid data recording area as part of root directory file management information.

24. (Currently Amended) A data recording apparatus as described in claim 23, wherein the chaining information ~~recording means~~ recorder records the invalid extent management information using an indirect entry for managing a root directory file recording area.

25. (Currently Amended) A data recording apparatus for performing a file recording process on a data storage medium for recording and reproducing a file managed using a volume/file structure [[where]] in which a number of data recording operations to a same area is limited, the apparatus comprising:

a file set information ~~reproducing means for reproducing~~ reproducer that reproduces address information of an area [[where]] in which main chaining information and reserve chaining information are recorded at a beginning of a volume space using a file set descriptor; and

a chaining information ~~recording means for reproducing~~ recorder that reproduces, using the main chaining information or the reserve chaining information, following the main chaining information or the reserve chaining information, or root directory file management information; and

————— a chaining information recording means for that plurally recording records the main chaining

information and the reserve chaining information having address information of an area [[where]]

in which the root directory file management information and the main chaining information and the

reserve chaining information are update recorded.

26. (Currently Amended) A data reproducing method for performing a file reproducing

process from a data storage medium for recording and reproducing a file managed using a

volume/file structure [[where]] in which a number of data recording operations to a same area is

limited, the method comprising:

[[a]] reproducing file set information reproducing step for comprising reproducing address

information for an area [[where]] in which main chaining information and reserve chaining

information are recorded at a beginning of a volume space using a file set descriptor; and

[[a]] recording chaining information recording step for comprising reproducing, using the

main chaining information or the reserve chaining information, following the main chaining

information or the reserve chaining information, or root directory file management information.

27. (Currently Amended) A data reproducing apparatus for performing a file reproducing

process from a data storage medium for recording and reproducing a file managed using a

volume/file structure [[where]] in which a number of data recording operations to a same area is

limited, the apparatus comprising:

a file set information reproducing means for reproducing reproducer that reproduces address

information for an area [[where]] in which the main chaining information and the reserve chaining

information are recorded at a beginning of a volume space using a file set descriptor; and

a chaining information ~~recording means for reproducing~~ <u>recorder that reproduces</u>, using <u>the</u>

main chaining information or <u>the</u> reserve chaining information, following <u>the</u> main chaining

information or <u>the</u> reserve chaining information, or root directory file management information.